Research Article

Study of various risk factors associated with pre-eclampsia: A hospital based study

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Abstract

Introduction: Pre-eclampsia is a disorder of pregnancy which is characterized by high blood pressure and a large amount of protein in the urine. The disorder usually occurs in the third trimester of pregnancy and gets worse over time. In severe stage of the disease, breakdown of red blood cell, decrease in platelet count, impaired liver function, kidney dysfunction, swelling, shortness of breath due to fluid in the lungs, or visual disturbances may be observed. **Aims and Objectives:** To study of various risk factors associated with pre-eclampsia in a tertiary care center. **Material and Method:** The present case control study was conducted in the department of OB and GY of ABC medical college and hospital. For the purpose of study we selected 50 cases and 50 controls. In case group those with hypertension after the 20th week of gestation with associated proteinuria were selected. The next available pregnant woman not diagnosed with pre-eclampsia was selected as control. The selected cases and controls were explained about the study. The details information relating to maternal and obstetric factors was obtained from each case, which included age, parity, body mass index (BMI), multiple pregnancy, history of chronic hypertension, history of diabetes, history of renal disease, family history of hypertension, and history of PIH in earlier pregnancy. Similar information was obtained from each control. The collected information was entered in prestructured proforma. **Results:** 28% and 18% cases and controls were more than age of 30 years of age respectively. Majority of the cases and controls were primiparous. Out of total 19 multi parous women, 9 were having past history of preeclampsia, whereas out of 13 multi parous women, only one had past history of preeclampsia. Seven cases had reported history of preeclampsia in their family. 8 cases and one control were suffering from diabetes in the study with Odds ratio of 9.33. Chronic hypertension was reported by 9 cases and 2 controls (OR=5.268 with CI=1.076-25.779). History of renal disease was given by 9 cases and 2 controls. (OR=10.756, CI=1.307- 88.47). It was seen that BMI more than 25 significantly associated with cases as compared to controls. (OR= 5.268, CI=1.076- 25.77) **Conclusion:** Thus we conclude that pre eclampsia is associated with various factors. History of hypertension increased, previous and family history of pre-eclampsia and high maternal weight were the risk factors associated with pre eclampsia.

Keywords: pre eclampsia, diabetes, hypertension, odds ratio.

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INTRODUCTION

Pre-eclampsia is a disorder of pregnancy which is characterized by high blood pressure and a large amount of protein in the urine.[1] The disorder usually occurs in the third trimester of pregnancy and gets worse over time.[2,3] In severe stage of the disease, breakdown of red blood cell, decrease in platelet count, impaired liver function, kidney dysfunction, swelling, shortness of breath due to fluid in the lungs, or visual disturbances may be observed.[2,3] Pre-eclampsia is a major contributor to maternal and fetal mortality and morbidity[4]. The incidence of preeclampsia ranges from two to ten percent between studies, depending on the population studied and the criteria used to diagnose pre-eclampsia.[5,6] Though the cause for pre-eclampsia is unknown, there does appear to be certain risk factors associated with the condition. The factors that have been postulated to influence the risk of pre-eclampsia among the mothers include diabetes, renal

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disease, obesity, multiple pregnancy, primiparity, age above 30 years, personal or family history of pre-eclampsia and chronic hypertension. In developing countries, evidence on the association between these factors and pre-eclampsia is scarce. There are many studies in developed and some developing countries to assess the association between these factors and pre-eclampsia[7,8,9]

AIMS AND OBJECTIVES:

To study of various risk factors associated with pre-eclampsia in a teratiry care center.

MATERIAL AND METHOD

The present case control study was conducted in the department of OB and GY of RIMS Medical College, Ongole. For the purpose of study we selected 50 cases and 50 controls.

- **Case group:** those with hypertension after the 20th week of gestation with associated proteinuria.
- **Control group:** The next available pregnant woman not diagnosed with pre-eclampsia was selected as control.

Thus it was ensured that case and control ratio was 1:1. The selected cases and controls were explained about the study. The details information relating to maternal and obstetric factors was obtained from each case, which included age, parity, body mass index (BMI), multiple pregnancy, history of chronic hypertension, history of diabetes, history of renal disease, family history of hypertension, and history of PIH in earlier pregnancy. Similar information was obtained from each control. The collected information was entered in prestructured proforma. Data were analyzed by the use of SPSS version 12. Crude and adjusted odds ratios with 95% confidence intervals were calculated.

RESULTS

Table 1: Distribution according age, parity and past and family history of pre eclampsia

		Case	Control	Odds ratio (95% CI)
Age	20-29	36 (72%)	41 (82%)	0.56 (0.2-1.6)
	≥30	14 (28%)	9 (18%)	
Parity	Multi	19 (38%)	13 (26%)	1.74 (0.69- 4.47)
	Primi	31 (62%)	37 (74%)	
Past history of pre-eclampsia	Present	9 (47.37%)	1 (7.69%)	10.80 (1.16-100.43)
	Absent	10 (52.63%)	12 (92.31%)	
Family history of pre-eclampsia	Present	7 (14%)	2 (4%)	6.769 (1.141- 32.368)
	Absent	43 (86%)	48 (96%)	

It was seen that majority of the cases and controls were between the age group of 20- 29 years. 28% and 18% cases and controls were more than age of 30 years of age respectively. Majority of the cases and controls were primiparous. Out of total 19 multi parous women, 9 were having past history of preeclampsia, whereas out of 13 multi parous women, only one had past history of preeclampsia. Seven cases had reported history of preeclampsia in their family.

Table 2: Distribution according various risk factors associated with pre eclampsia

		Case	Control	Odds ratio (95% CI)
DM	Present	8 (16%)	1 (2%)	9.33 (1.12- 77.707)
	Absent	42 (84%)	49 (98%)	
Chronic HTN	Present	9 (18%)	2 (4%)	5.268 (1.076- 25.779)
	Absent	41 (82%)	48 (96%)	
Renal disease	Present	10 (20%)	1 (2%)	10.756 (1.307- 88.47)
	Absent	40 (80%)	49 (98%)	
BMI	≥25	9 (18%)	2 (4%)	5.268 (1.076- 25.77)
	18.5 – 24.9	38 (76%)	40 (80%)	2.98 (0.74- 11.988)
	<18.5	3 (6%)	8 (16%)	

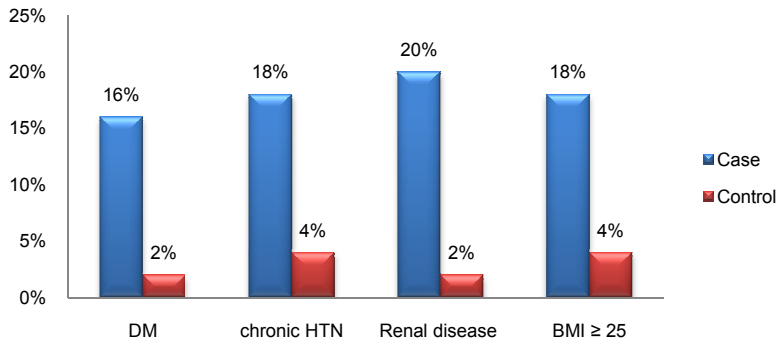

Figure 1: Various risk factors associated with pre eclampsia

It was seen that 8 cases and one control were suffering from diabetes in the study with Odds ratio of 9.33. Chronic hypertension was reported by 9 cases and 2 controls (OR=5.268 with CI=1.076- 25.779). History of renal disease was given by 9 cases and 2 controls. (OR=10.756, CI=1.307- 88.47). it was seen that BMI more than 25 significantly associated with cases as compared to controls. (OR= 5.268, CI=1.076- 25.77)

DISCUSSION

The present case control study was conducted to study the various risk factors associated with pre-eclampsia. For this purpose 50 cases and 50 controls were selected. It was seen that majority of the cases and controls were between the age group of 20- 29 years. 28% and 18% cases and controls were more than age of 30 years of age respectively. The nationwide US data suggest that the risk of pre-eclampsia increases by 30% for every additional year of age past 34years.[10] Majority of the cases and controls were primiparous. Khan KS *et al*[11], Hartikainen A *et al*[12] in their cohort study stated that the risk of pre-eclampsia decreases with increase in parity. Thus the risk of pre-eclampsia is more in nulliuparous and primiparous women. Out of total 19 multi parous women, 9 were having past history of preeclampsia, whereas out of 13 multi parous women, only one had past history of preeclampsia (OR=10.80, CI=1.16-100.43). Lee CJ *et al*[7] and Sibai BM *et al*[13] reported that Women who have pre-eclampsia in a first pregnancy have seven times the risk of pre-eclampsia in a second pregnancy. Seven cases had reported history of preeclampsia in their family as compared to 2 women in control group. (OR=6.769, CI= 1.141- 32.368). Arngrimsson R *et al*[14] stated that family history of pre-eclampsia nearly triples the risk of pre-eclampsia. Thus the findings are consistent with the present study. It was seen that 8 cases and one control were suffering from diabetes in the study with Odds ratio of 9.33. Chronic hypertension was reported by 9 cases and 2 controls (OR=5.268 with CI=1.076- 25.779). Thus the history of chronic hypertension is strongly associated pre-eclampsia. Duckitt K *et al*[15] and Davies AM *et al*[16] in their study stated that chronic hypertension is a common problem in nonpregnant women and increases the incidence of pre-eclampsia. History of renal disease was given by 9 cases and 2 controls. (OR=10.756, CI=1.307-88.47). Davies *et al*[16] also found that the prevalence of renal disease was higher in women who developed preeclampsia compared with those that did not (5.3% v 1.8%). It was seen that BMI more than 25 significantly associated with cases as compared to controls (OR= 5.268, CI=1.076- 25.77). Thus the increasing BMI is one of major risk factor for the development of preeclampsia. Lee CJ *et al*,[7] Stone JL *et al*[17] and Ros HS *et al*[18] also observe that increase in BMI was associated with increase in the risk of pre-eclampsia.

CONCLUSION

Thus we conclude that pre eclampsia is associated with various factors. History of hypertension increased, previous and family history of pre-eclampsia and high maternal weight were the risk factors associated with pre eclampsia.

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